Firmware for function units
OPTIMUS RAD + R/F + C

Explanation:

function unit (FU) name - location - version + details		
PCB versions 4512 1nn oooov (as part of unit 4512 104 xxxxx), service kit possible		
PROM position PROM 12NC PROM label print in **bold** letters all released firmware versions ever delivered for the related PCB version(s) appear in this field	**Optimus RAD release 2.3**	**Opt. RAD+R/F rel. 3.3 + 3.5 + 3.6** **Optimus C release 1.1 + 1.2**
	a) minimum version	x) minimum version CU RAD+R/F rel. 3.3 + 3.5 y) minimum version CU C (Duo only) rel. 1.1 + 1.2
	a) with all FCO upgrades implemented this minimum release and level of the FU firmware should be present, previous versions are not supported in case of problems *higher versions are always possible* *latest version = recommended version in case of replacement*	x) + y) this minimum release and level of the FU firmware can be present from the initial delivery or should be present with all FCO upgrades implemented; previous versions (even if mentioned) are not supported in case of problems *higher versions are always possible* *latest version = recommended version in case of replacement*

Notice:
Several PCB's are equipped with new CAN driver chips. These require a different FU firmware.
Function unit names are marked with old CAN driver and new CAN driver to recognize the difference.
There are service kits mentioned which include the new PCB and its new firmware PROM

mA_control EZ119 old CAN driver		
PCB versions 4512 108 05941 / 2 / 3 / 4 / 5 / 6 / 7 / 8 / 9		
PROM D800	a) minimum version for CU release 2.3	x) min. RAD+R/F 3.3+3.5+3.6 y) min. C 1.1+1.2
4512 113 **20201** 4512 113 **20202** 4512 113 **20203** 4512 113 **20204** 4512 113 **20205** 4512 113 **20211** 4512 113 **20212**	a)	x) y)

mA_control EZ119 new CAN driver		
PCB versions 4512 178 00181 (or 4512 108 12202 / 3) service kit 4512 104 97461 (PCB + PROM)		
PROM D800		
4512 113 **20221**	valid for **all release 2.3** generators, but only in combination with the new PCB	valid for all generators release **3.3 + 3.5 + 3.6 RAD+R/F** and **1.1+1.2 C**, but only in combination with the new PCB

kV_control_1 EZ130 **50kW RAD** 1 converter		
PCB versions 4512 108 05841 / 2 / 3 / 4 / 5		
PROM D800	a) minimum version for CU release 2.3	**PCB must not be used at Optimus RAD+R/F rel. 3.x and C rel. 1.x**
4512 113 **20101** 4512 113 **20111** 4512 113 **20112** 4512 113 **20121** 4512 113 **20131** 4512 113 **20132**	a)	

kV_control_2 EZ130 **65/80kW RAD** 2 converters		
PCB versions 4512 108 08661 / 2 / 3 / 4		
PROM D800	a) minimum version for CU release 2.3	**PCB must not be used at Optimus RAD+R/F rel. 3.x and C rel. 1.x**
4512 113 **20101** 4512 113 **20111** 4512 113 **20112** 4512 113 **20121** 4512 113 **20131** 4512 113 **20132**	a)	

kV_control_3 EZ130 **50kW RAD** 1 converter old CAN driver		
PCB versions 4512 108 09081 / 2 / 3		
PROM D800	**PCB must not be used at release 2 generators !!**	x) min. **RAD only** 3.3+3.5+3.6
4512 113 **20121** 4512 113 **20131** 4512 113 **20132**		x)

kV_control_3 EZ130 **50kW RAD** 1 converter new CAN driver		
PCB version 4512 178 00261 service kit 4512 105 00052 (PCB + PROMs)		
PROM D800	**PCB must not be used at release 2 generators !!**	**RAD only** 3.3+3.5+3.6
4512 113 **20141**		x)

kV_control_3 EZ130 **50kW R/F** 1 converter old CAN driver		
PCB versions 4512 108 09081 / 2 / 3		
PROM D800	**PCB must not be used at release 2 generators !!**	1) min. RAD+R/F 3.3+3.5+3.6 2) min. C 1.1+1.2
4512 113 **26201** 4512 113 **26211** 4512 113 **26212**		x) y)

kV_control_3 EZ130 **50kW R/F** 1 converter new CAN driver		
PCB version 4512 178 00261 service kit 4512 105 00052 (PCB + PROMs)		
PROM D800	**PCB must not be used at release 2 generators !!**	RAD+R/F 3.3+3.5+3.6 C 1.1+1.2
4512 113 **26221**		

kV_control_3 EZ130 **50kW RAD US Army version** 1 converter with R/F tank 9890 000 00011 new CAN driver		
PCB version 4512 178 00261 service kit 4512 105 00052 (PCB + PROMs)		
PROM D800	**PCB must not be used at release 2 generators !!**	RAD 3.5+3.6
4512 113 **26221**		

kV_control_4 EZ130 **50kW R/F** 2 converters old CAN driver		
PCB versions 4512 108 09102 / 3 / 4		
PROM D800	**PCB must not be used at release 2 generators !!**	x) min. **RAD** 3.3+3.5+3.6 **x) special: R/F** 3.3. + 3.5, only the 50kW 2 converter versions
4512 113 **20121** 4512 113 **20131** 4512 113 **20132**		x)

kV_control_4 EZ130 **50kW R/F** 2 converters new CAN driver		
PCB version 4512 178 00281 service kit 4512 105 00061 (PCB + PROMs)		
PROM D800	**PCB must not be used at release 2 generators !!**	**special: R/F** 3.3+3.5+3.6 50kW 2 converter versions
4512 113 **26221**		

kV_control_4 EZ130 **65/80kW RAD** 2 converters old CAN driver		
PCB versions 4512 108 09102 / 3 / 4		
PROM D800	**PCB must not be used at release 2 generators !!**	x) minimum **RAD only** 3.3+3.5+3.6
4512 113 **20121** 4512 113 **20131** 4512 113 **20132**		x)

kV_control_4 EZ130 **65/80kW RAD** 2 converters new CAN driver		
PCB version 4512 178 00281 service kit 4512 105 00061 (PCB + PROMs)		
PROM D800	**PCB must not be used at release 2 generators !!**	**RAD only** 3.3+3.5+3.6
4512 113 **20141**		

kV_control_4 EZ130 **65/80kW R/F**2 converters old CAN driver		
PCB versions 4512 108 09102 / 3 / 4		
PROM D800	**PCB must not be used at release 2 generators !!**	x) min. RAD+R/F 3.3+3.5+3.6 y) min. C 1.1+1.2
4512 113 **26211** 4512 113 **26212**		x) y)

kV_control_4 EZ130 **65/80kW R/F**2 converters new CAN driver		
PCB version 4512 178 00281 service kit 4512 105 00061 (PCB + PROMs)		
PROM D800	**PCB must not be used at release 2 generators !!**	RAD+R/F 3.3+3.5+3.6 C 1.1+1.2
4512 113 **26221**		

Basic interface EZ150 old CAN driver		
PCB versions 4512 108 05961 / 2 / 3 / 4 / 5 and 4512 178 00021		
PROM D6	a) minimum version for CU release 2.3	x) min. RAD+R/F 3.3+3.5+3.6 y) min. C 1.1+1.2
4512 113 **20301** 4512 113 **20311**	a)	x) y) (from PCB versions 4512 108 05964 onwards with CU release 3.x)
4512 114 **25801**	not compatible with CU release 2.3	should not be in the field anymore, see FCO 00 135 012

Basic interface EZ150 new CAN driver		
PCB versions 4512 108 12622 and 4512 178 00201 service kit 4512 104 97451 (PCB + PROM)		
PROM D6		
4512 113 **20321**	valid for **all release 2.3** generators, but only in combination with the new PCB	valid for all generators release **3.3 + 3.5 + 3.6 RAD+R/F** and **1.1+1.2 C**, but only in combination with the new PCB

High Speed Rotor Control Y100 old CAN driver		
PCB versions 4512 108 08263 (part of units 4512 104 33791 / 2)		
PROM D2	**This unit should not exist anymore in the field, it should have been replaced by the unit 4512 104 71461 with FCO 00 135 008**	**PCB / unit must not be used !**
4512 113 20401 **4512 113 22301** **4512 113 22311** **4512 113 22312**		

High Speed Rotor Control Y100 old CAN driver		
PCB versions 4512 108 08702 / 3 (part of units 4512 104 71401 / 2 / 3 / 4 / 5 / 6)		
PROM D2		x) min. RAD+R/F 3.3+3.5+3.6 y) min. C 1.1+1.2
4512 113 22301 **4512 113 22311** **4512 113 22312**	valid for all release 2.3 generators	x) y) delivered from unit versions 4512 104 71403 onwards with CU release 3.x

High Speed Rotor Control Y100 old CAN driver		
PCB versions 4512 108 09743 (part of units 4512 104 91203 or 4512 104 71421/2 or 4512 104 71461/2/3 or 4512 104 73601)		
PROM D2		x) min. RAD+R/F 3.3+3.5+3.6 y) min. C 1.1+1.2
4512 113 22322 **4512 113 22323**	valid for all release 2.3 generators	x) y)

High Speed Rotor Control Y100 new CAN driver		
PCB versions 4512 108 12841 (part of units 4512 104 74101 Rel. 2.3 RAD and 4512 104 73611 / 2 Rel.3.x RAD-R/F and 1.x C) order 9890 000 61323 (air stream up) for Rel. 2.3 RAD or 9890 000 61333 (air stream down) for Rel. 3.x RAD-R/F and 1.x C; successor for all versions 9890 000 02683 / 4 / 5 / 6		
PROM D2		
4512 113 22341 **4512 113 22342** **4512 113 22343**	valid for **all release 2.3** generators, but only in combination with the new PCB	valid for all generators release **3.3 + 3.5 + 3.6 RAD+R/F** and **1.1+1.2 C**, but only in combination with the new PCB

Operating desk C300 old CAN driver		
PCB versions 4512 108 08241 / 2 / 3 / 4 / 5 / 6 / 7 / 8 and 4512 178 00062		
PROM D2	1) minimum version for CU release 2.3	x) min. **RAD+R/F only** 3.3+3.5+3.6
4512 113 **20501** 4512 113 **20502** 4512 113 **20504** 4512 113 **20511** 4512 113 **20512** 4512 113 **20521** 4512 113 **20522** 4512 113 **20523** 4512 113 **20524** 4512 113 **20525**	a)	x)

Operating desk C300 new CAN driver		
PCB version 4512 108 12521 (or 4512 178 00141) service kit 4512 104 99531 (PCB + PROM)		
PROM D2		
4512 113 **20531**	valid for **all release 2.3** generators, but only in combination with the new PCB	valid for **all release 3.3+3.5+3.6 RAD+R/F** generators, but only in combination with the new PCB

Universal I/O interface WA / WB 102 old CAN driver		
PCB versions 4512 108 08041 / 2 / 3 / 4 / 5 / 6 / 7		
PROM D10	a) minimum version for CU release 2.3	x) min. **RAD+R/F only** 3.3+3.5+3.6
4512 113 **20601** 4512 113 **20611**	a) only for Bucky / Tomo 1/2 WA102 or 1WA and 2WA CU release 2.3 does not support WB	x) for Bucky / Tomo 1/2 WA102 or 1WA and 2WA and Fluoro 1 WB 102 WB from PCB 4512 108 08046 onwards

Universal I/O interface WA / WB 102 new CAN driver		
PCB versions 4512 108 12642 / 3 service kit 4512 104 96632 (PCB + PROM)		
PROM D10		
4512 113 **20621**	valid for **all release 2.3** generators, but only in combination with the new PCB only for Bucky / Tomo 1/2 WA102 or 1WA and 2WA CU release 2.3 does not support WB	valid for **all release 3.3.+3.5+3.6 RAD+R/F** generators, but only in combination with the new PCB for Bucky / Tomo 1/2 WA102 or 1WA and 2WA and Fluoro 1 WB 102